Project Title and Brief Abstract

- Project Title: Enhanced Wildland Fire Management Decision Support Using Lidar-Infused LANDFIRE Data

- Project Team: Birgit Peterson (USGS), Matt Jolly (USFS), Kurtis Nelson (USGS), Carl Seielstad (UM), Russ Parsons (USFS)

- Project Summary: Developing application allowing the easy derivation of vegetation canopy structure metrics from lidar data

- Earth Observations applied: Landsat, Airborne Lidar, ICESat

Applied Sciences Program

NASA

Title
PI: Birgit Peterson, USGS (bpeterson@usgs.gov, 605-594-27)

Wildland Fire Program
ACTIVE PROJECT
Date (format: Month DD, YYYY

Purpose and Objective

This project integrates lidar-derived vegetation structure and fuels information with elements of the LANDFIRE product suite. LANDFIRE is a national vegetation and fuels mapping program that provides continuous, consistent, landscape-scale information to land managers to be used for decision support. LANDFIRE relies on field data and Landsat imagery, among other data sources, to develop its map products. Lidar data are not used in the current LANDFIRE mapping process because they are not nationally available, Locally, land managers fail to use lidar data because of training and infrastructure limitations. CHISLIC automatically integrates lidar derived products of canopy height, canopy cover, and canopy base height with the corresponding LANDFIRE data.

Societal Benefit Area(s): fire mitigation, fuels treatment planning
Geographic Focus: national
Targeted End-Users: land managers, fire behavior modelers

Figure: Integration of lidar into LANDFIRE Remap, lessons learned from CHISLIC

Approach

- *Integrate existing canopy bulk density algorithm used by LANDFIRE into CHISLIC*
- *Incorporate static Landsat mosaics to drive point extrapolation process*
- *Continue testing of CHISLIC in its Fusion variant, ensuring that all functionality is working properly*
- *Have a task order in place for programmer time, but not enough funds at EROS to ensure all work will get done*
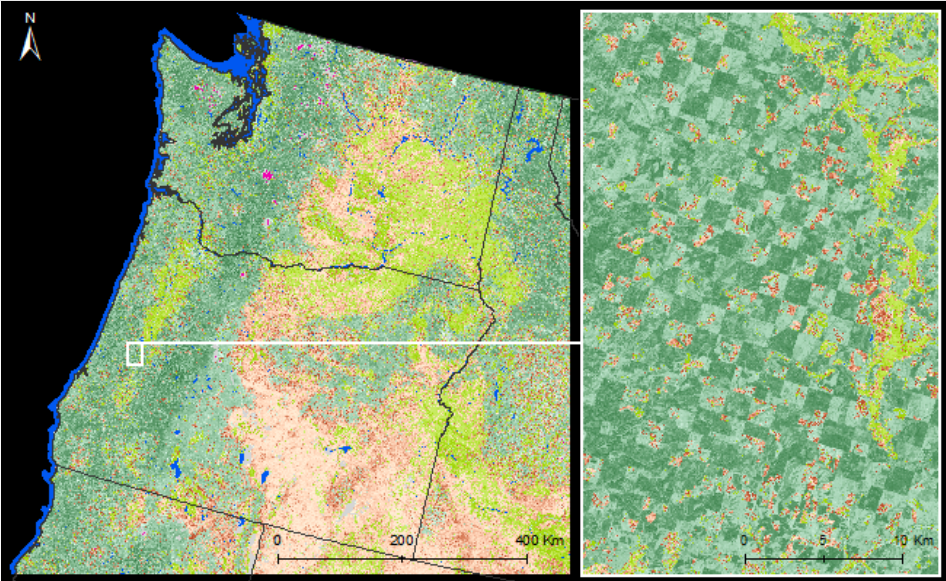- *Working on way to efficiently transfer funds from USFS to EROS*
- *Requesting NCE*

Key Milestones

Milestone Statement	Date
PI Meeting in Boulder, CO	02/17
Wrap-up CHISLIC testing	04/17
Integrate final improvements	05/17
Integrate Landsat mosaics and Icesat data on USFS Server	10/17
Project wrap-up and documentation	12/17

$ARL_{Start} = 1$ $ARL_{Most\ Recent} = 5/6$ $ARL_{Goal} = $ unknown

Our work on CHISLIC has sparked other research and projects:

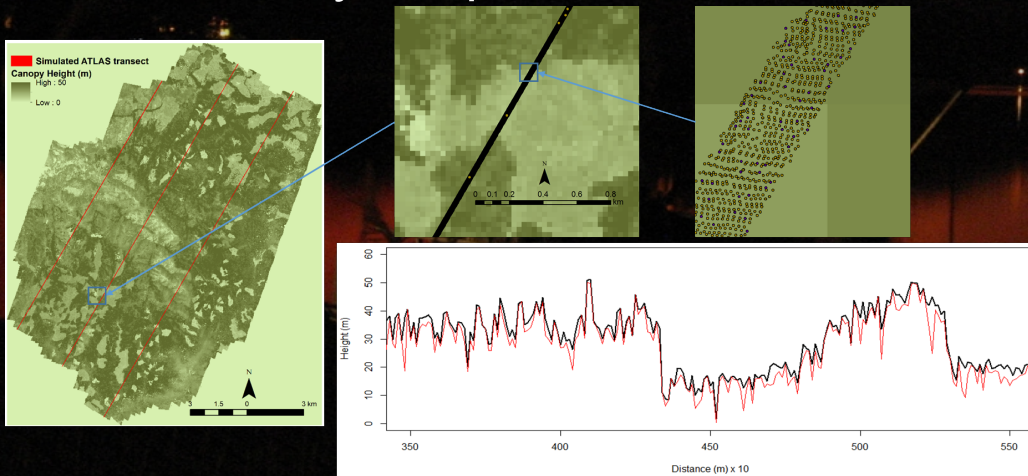LANDFIRE Remap
Lidar integration
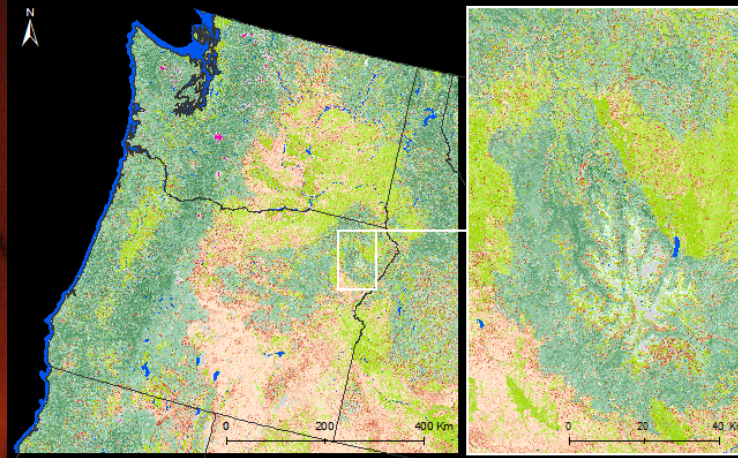
Community for Data
Integration Proposal

Understory Fuels

ICESat-2 Early Adopter

Challenge:
Loss of access to LASTools to drive CHISLIC.

We have switched to using Fusion with decent success but elements still need to be tested/fixed

Challenge:
Paying for programmer work

We have sufficient funds with partners at USFS – how to transfer these efficiently is being discussed

Summary of Challenges; Problems; Objective Analysis

Project is behind schedule largely due to shift to Fusion.

Relying on programmer time is costly.

We have the funds, but need to get them to USGS EROS.

Team members pulled in other directions

Signs of Positive Progress

Working through issues with CHISLIC – testing ongoing and issues more and more clearly defined – the more we can pin-point issues, the easier and cheaper it is for the programmer to fix them

Goal:

- Functioning CHISLIC tool that enables users to convert raw lidar into usable structure metrics

Steps:

- Complete of programming for desk-top application at EROS
- Stage CHISLIC on USFS server – server is ready to go.
- Stage Data – Landsat mosaics, links to airborne lidar and vetted ICESat archive
- Prepare user guide and other documentation

Budget:
We have the funds, just need to get them to USGS EROS
Anticipate asking for NCE

- Wrap-up CHISLIC testing 04/17

- Integrate final improvements 05/17

- Integrate Landsat mosaics and ICEsat data on USFS Server 10/17

- Project wrap-up and documentation 12/17

- Access to project management resources

- Understanding of funding mechanisms

- NCE

Honest Opinion

Through the course of the project we've heard repeatedly how useful lidar would be and how managers are having a hard time using data to their full potential

Project's Impact/Potential as an Analogy